BASIC DESIGN CRITERIA FOR SUBSURFACE CONSTRUCTED WETLANDS

Subsurface Constructed Wetlands:

1. The wetland is usually designed for **5** to **7** days detention time.

2. Each wetland has **one** cell for residential and at least **2** cells for commercial projects with each cell having a Length to width ratio of no greater than **2:1.**

3. The depth of gravel in the wetland is no greater than **24** inches.

4. There are three different gravel sizes in the wetland. The inlet and outlet ends of the wetland have course gravel in the range of 1 1/2 to 3 inches in size (**INDOT #1**). The area between the ends has gravel in the range of 1/2 to 1 inch in size (**INDOT #8**). The surface layer of gravel over the entire wetland is usually 6 inches in depth width with a range of 3/8 to 1/2 inch in size (**pea gravel**). All gravels are screened and washed to remove fines.

5. The water level in the wetland is set at a depth of **2** to **3** inches below the surface of the gravel by the outlet adjustable sump pipe. The outlet sump pipe is orificed with an **1 1/2-inch hole** to regulate the flow from the wetland after a 6-inch rainfall event to spread the rainfall accumulation over a 24 hour period.

6. The wetlands are lined with a **30** mil liner for commercial projects and a **20** mil liner for residential projects.

7. The wetland is tested for leaks over a 24-hour period with at least 6-inch depth of water above the inlet and outlet distribution and collection pipe.

8. The **inlet** distribution and **outlet** collection pipes for each cell of the wetland are placed at the **bottom** of the wetland gravel.

9. Some commonly used wetland plants are **Cattails** (*Typha*) and **Bulrushes** (*Scirpus*) along with other appropriate species. The shallower rooted plants are located near the inlet because of the higher influent temperatures and high nutrient levels with deeper rooted plants located toward the end of the wetland.

REV 6/26/00

ABSORPTION FIELD CRITERIA

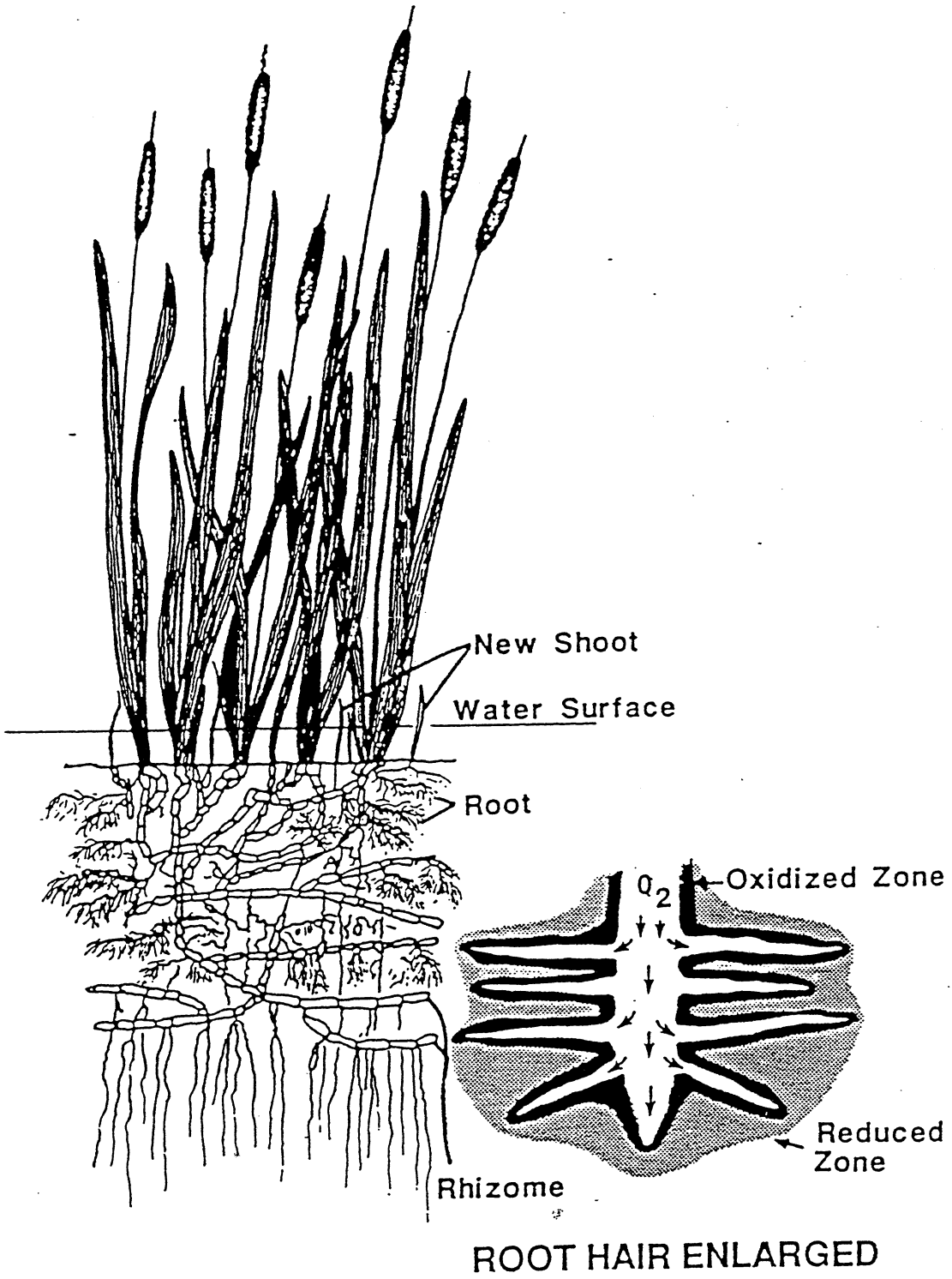
Design Criteria:

1. Selection and sizing of the absorption field is **always** based upon the peak daily wastewater load and the on-site soil survey report, that is done by an **ARCPACS certified soil scientist**, in the area of the absorption field.

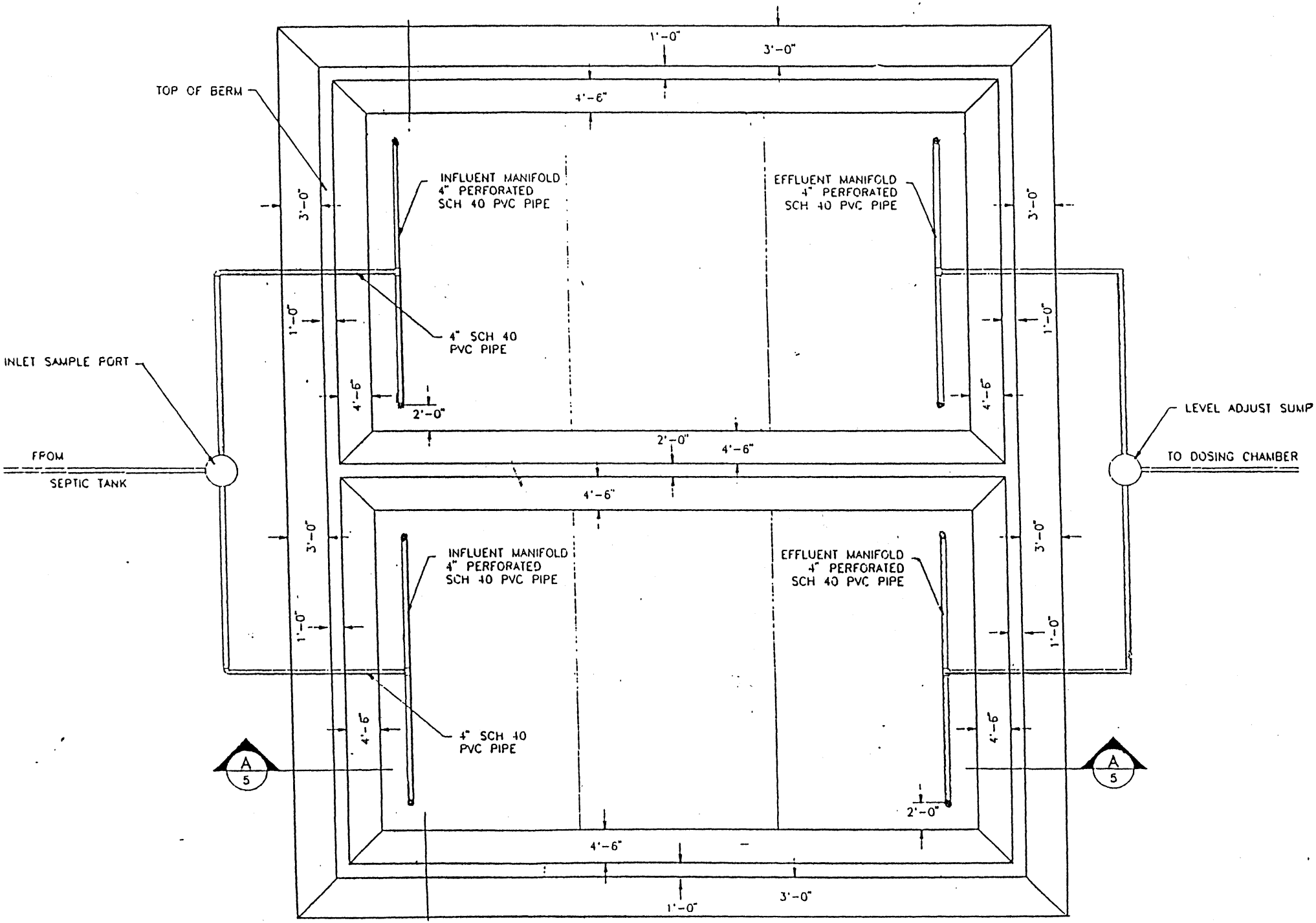
2. There is an allowable reduction in the size of the absorption field associated with a subsurface constructed wetland based upon the soil loading rate. For soil loading rates equal to or greater than **0.5 GPD per square foot** but less than or equal to **1.2 GPD per square foot**, the allowable reduction in field size is **50 per cent.** For soil loading rates of less than **0.5 GPD per square foot** but greater than or equal to **0.25 GPD per square foot**, the allowable reduction in the field is **33 per cent.**

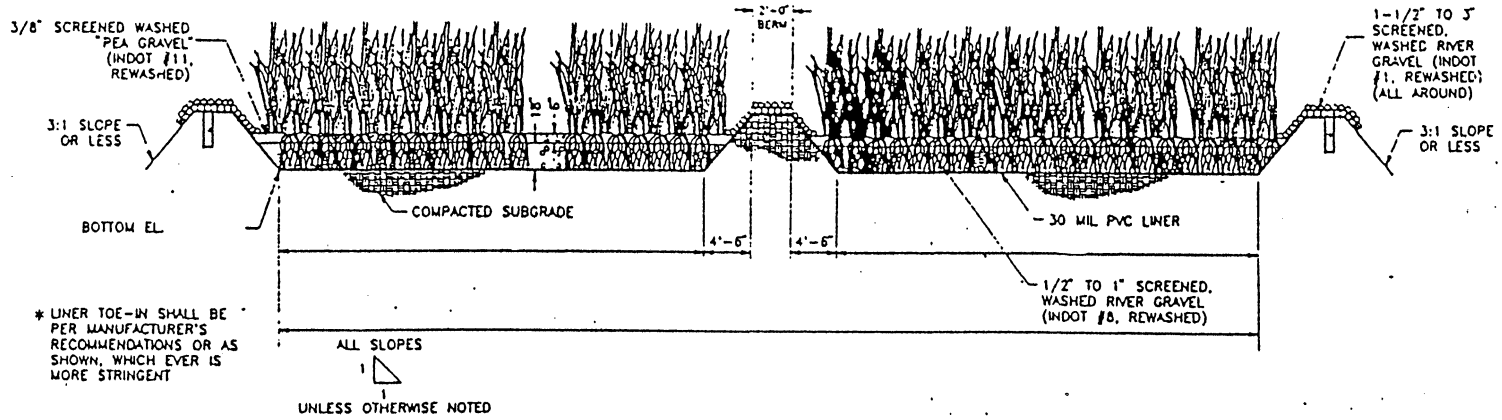
3. The septic tanks are sized for either a 36 or 48 hour detention time.

REV 6/26/00



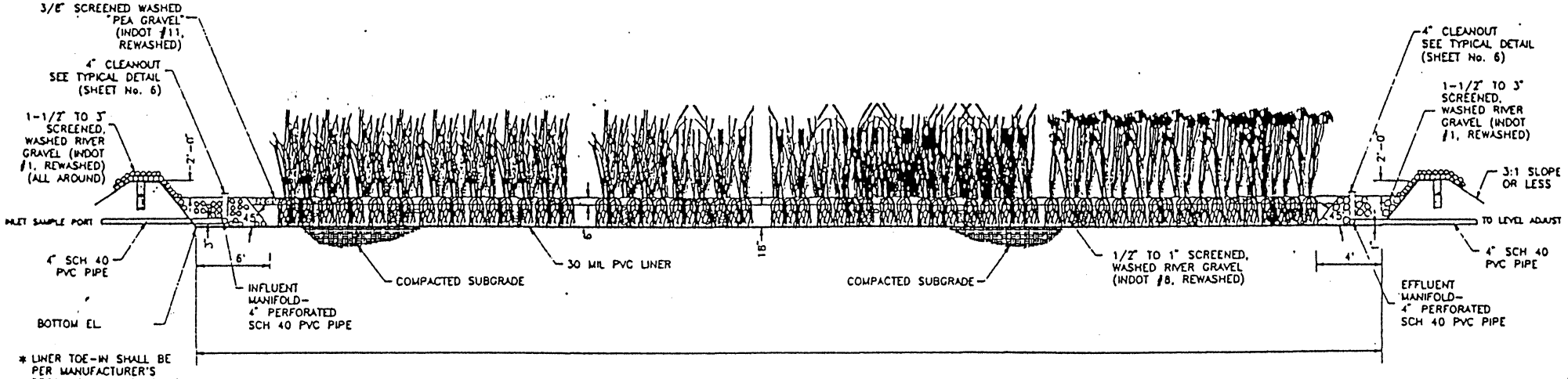
Wetlands plants have the unique ability to transport oxygen to support their roots growing in anaerobic substrates.


TOP OF BERM
INFLUENT MANIFOLD
4" PERFORATED
SCH 40 PVC PIPE
EFFLUENT MANIFOLD
4" PERFORATED
SCH 40 PVC PIPE
4" SCH 40
PVC PIPE
INLET SAMPLE PORT
FROM
SEPTIC TANK
LEVEL ADJUST SUMP
TO DOSING CHAMBER
INFLUENT MANIFOLD
4" PERFORATED
SCH 40 PVC PIPE
EFFLUENT MANIFOLD
4" PERFORATED
SCH 40 PVC PIPE
4" SCH 40
PVC PIPE
A
5
A
5
1'-0"
3'-0"
4'-6"
2'-0"



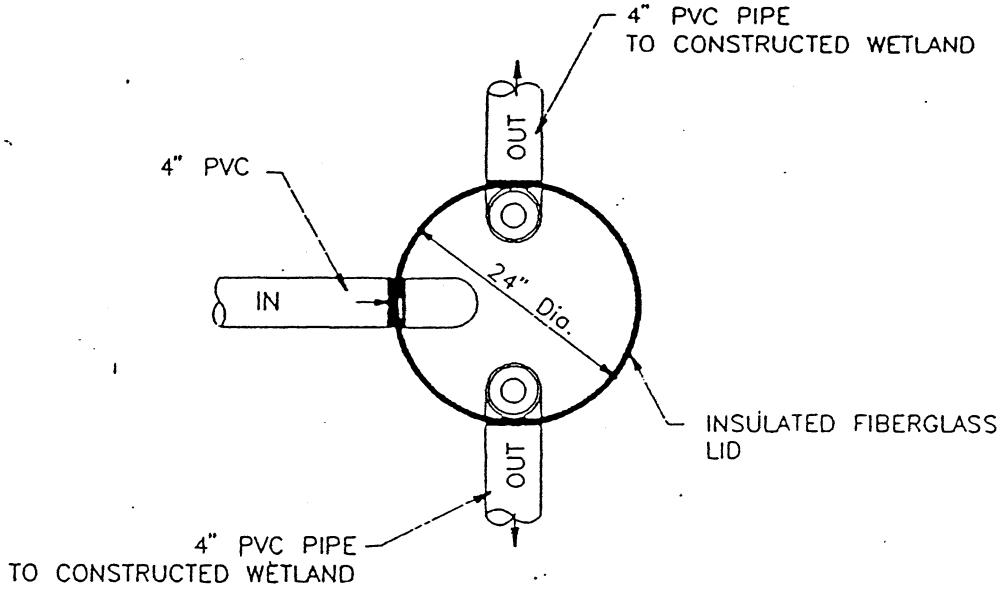
CONSTRUCTED WETLAND SECTION-B

NOT TO SCALE



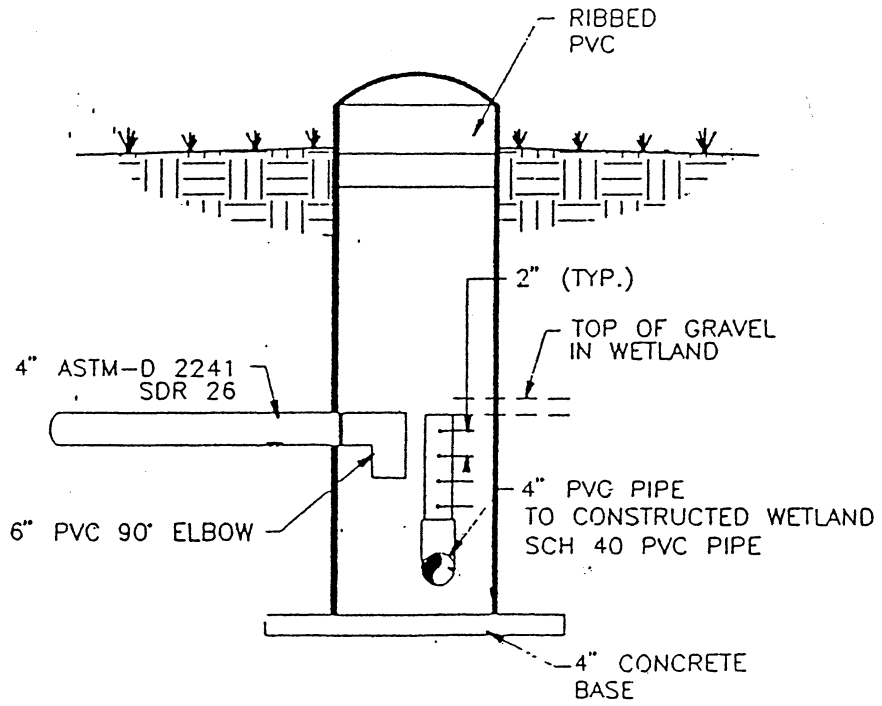
CONSTRUCTED WETLAND SECTION-A

NOT TO SCALE

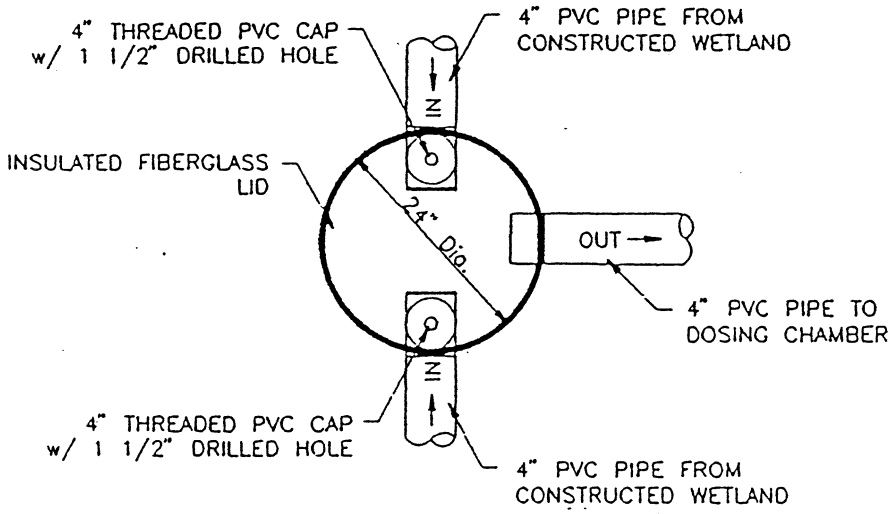


INLET SAMPLE PORT-SECTION

NOT TO SCALE

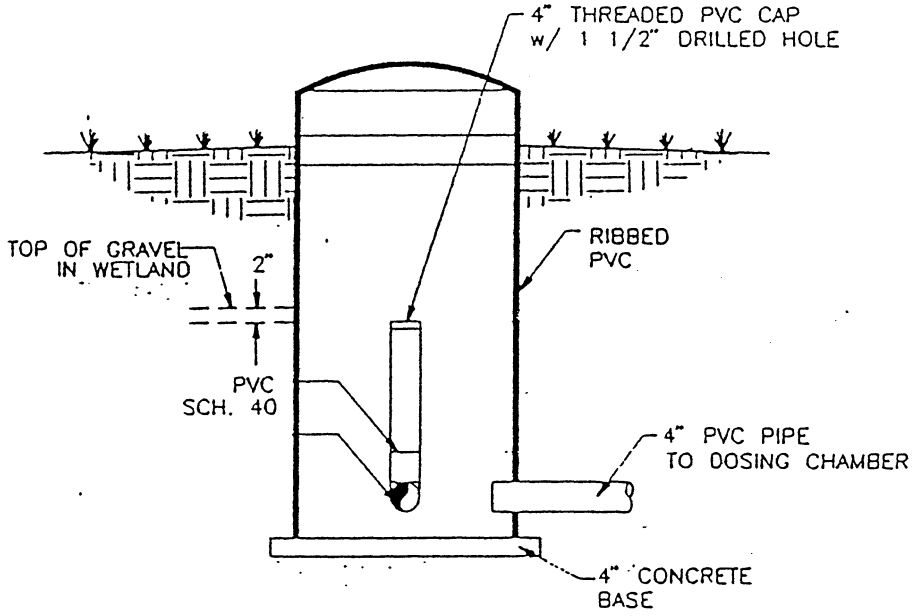


INLET SAMPLE PORT-SECTION



LEVEL ADJUST SUMP-PLAN

NOT TO SCALE



LEVEL ADJUST SUMP-SECTION

NOT TO SCALE